

AUG 29 2003

Attorney Docket No. W-9484-01

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of  
Chester et al.

Serial No.: 09/468,450

Filed: December 21, 1999

For: A Catalytic Cracking Process Using A  
Modified Mesoporous Aluminophosphate  
Material

) Before the Examiner  
) Berman, S.W.  
)  
)  
) Group Art: Unit: 1764  
)  
)  
)  
)  
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1764  
RECEIVED  
SEP 04 2003  
TC 1700

Mail Stop IDS  
Commissioner of Patents  
P.O. Box 1450  
Arlington, Virginia 22313-1450

Sir:

**CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8**

Pursuant to 37 CFR §1.8, I hereby certify that I have a reasonable basis to expect that this correspondence will be deposited with the United States Postal Service on or before the date indicated as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

9/28/03  
Date

*Julian P. Duray*  
Signature

**INFORMATION DISCLOSURE STATEMENT TRANSMITTAL  
LETTER/PETITION FOR CONSIDERATION UNDER 37 CFR §1.97**

I. Enclosed is:

- ☒ Information Disclosure Statement Form No. PTO-1449 and copies of references where indicated.
- ☒ Copy of the European Search Report dated April 11, 2003 on European Application No. 00984409.3-2104-US0033999 which is:
- ☒ The European counterpart of the above-identified U.S. application or one of its Parental ancestors, i.e. USSN 468,450, filed December 21, 1999.
- ☐ The European counterpart of related USSN \_\_\_\_\_, filed \_\_\_\_\_.

09/03/2003 MBIZUMES 00000042 071770 09468450

01 FC:1806 180.00 DA

Effective: Nov. 7, 2000

- ☒ Copy of the PCT Search Report dated January 2, 2002 on PCT Application No. PCT/US00/33999 which is:
- ☒ The PCT counterpart of the above-identified U.S. application or one of its Parental ancestors, i.e. USSN 468,450, filed December 21, 1999.
- ☐ The PCT counterpart of related USSN \_\_\_\_\_, filed \_\_\_\_\_.
- ☐ Copy of the \_\_\_\_\_ Search Report dated \_\_\_\_\_ on the corresponding \_\_\_\_\_ counterpart of the above-identified U.S. application.  
(country)
- ☐ Explanatory comments attached hereto as Appendix 1.
- II. ☐ The Examiner is requested to consider the references cited in the attached Information Disclosure Statement without a fee or certification because it was filed:
- ☐ within three months of the filing date of this national application, other than a continued prosecution application under 1.53(d);
- ☐ within three months of the date of entry of the national stage as set forth in §1.491 in an international application;
- ☐ before the mailing date of a first Office Action on the merits; or
- ☐ before the mailing of a first Office Action after filing of a Request for Continued Examination under §1.114.
- III. ☒ The Examiner is requested to consider the attached Information Disclosure Statement pursuant to 37 CFR §1.97(c) in that it is being filed after the periods specified in Paragraph II above, but before the first to occur of the mailing date of either:
- ☒ Final Action under 37 CFR §1.113;
- ☒ Notice of Allowance under 37 CFR §1.311; or
- ☒ An action that otherwise closes prosecution in the application;
- and in support of such request the undersigned either:
- ☐ has made the certification hereinbelow at Paragraph IVB pursuant to 37 CFR §1.97(e); or
- ☒ is paying a petition fee under 37 CFR §1.17(p) in the amount of \$180.00.

IVA. ☐ The Examiner is requested to consider the attached Information Disclosure Statement pursuant to 37 CFR §1.97(d) in that it is being filed before the payment of the Base Issue Fee and after the mailing date of any:

- (1) Final Action under 37 CFR §1.113;
- (2) Notice of Allowance under §1.311; or
- (3) An action that otherwise closes prosecution in the application.

and in support of said request the undersigned:

- (i) has made the certification hereinbelow at Paragraph IVB pursuant to 37 CFR §197(e); and
- (ii) is paying a petition fee under 37 CFR §1.17 (P) in the amount of \$180.00.

IVB. **Certification Under 37 CFR §1.97(e)**  
[applicable to only III or IV above]

☐ The undersigned hereby certifies that for each item of information contained in the Information Disclosure Statement it was either:

- (1) first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the statement, or
- (2) not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned upon making reasonable inquiry, was not known to any individual designated in §1.56(c) more than three months prior to the filing of the statement.

V. ☐ The Examiner is requested to make the art of record in the following parental U.S. applications relied upon for an earlier filing date under 35 USC §120, of record in the present above-identified application.

U. S. Serial No.	Filing Date

VI. Fee Payment

- ☒ Petition fee under 37 CFR §1.17(p) to consider Information Disclosure Statement under 37 CFR §1.97(c) and (d) is \$180.00.
- ☒ Charge \$180.00 to Deposit Account No. 07-1770.
- ☒ The Commissioner is hereby authorized to charge any additional fees under 37 CFR §1.16 and §1.17 which may be required by this paper, or credit any overpayment, to Deposit Account No. 07-1770. A duplicate copy of this Form is enclosed.
- ☐ No fee due.

August 28, 2003  
Date of Signature

Charles A. Cross  
Attorney or Agent  
Charles A. Cross - Reg. No. 32,406  
Telephone: (410) 531-4508

Post Office Address (to which correspondence is to be sent): W. R. Grace & Co.-Conn.  
Patent Dept.  
7500 Grace Drive  
Columbia, MD 21044-4098

W9484-01

09/468,450

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

APPLICANT  
Chester et al.

FILING DATE

12/21/1999

GROUP

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SEP 04 2003  
TC 1706

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL*	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	Copy Submitted
	20020016259	2/7/2002	Tsao	502	324	6/22/2001	<input checked="" type="checkbox"/>
	2882442	4/14/1959	Magnuson et al.	315	5.18	3/16/55	<input checked="" type="checkbox"/>
	3130007	5/21/1964	Breck	23	113	5/12/61	<input checked="" type="checkbox"/>
	3216789	11/9/1965	Breck	23	113	8/3/62	<input checked="" type="checkbox"/>
	3247195	4/19/1966	Kerr	260	242	1/4/1965	<input checked="" type="checkbox"/>
	3308069	3/7/1967	Wadlinger et al	252	455	5/1/64	<input checked="" type="checkbox"/>
	3314752	4/18/1967	Kerr	23	113	8/30/1961	<input checked="" type="checkbox"/>
	3449070	6/10/1969	McDaniel et al.	23	111	12/20/67	<input checked="" type="checkbox"/>
	3702886	11/14/1972	Argauer et al.	423	328	10/10/69	<input checked="" type="checkbox"/>
	3709976	1/9/1973	Tarhan	423	224	9/21/1970	<input checked="" type="checkbox"/>
	3972983	8/3/1976	Ciric	423	328	11/25/74	<input checked="" type="checkbox"/>
	4016218	4/5/1977	Haag et al.	260	671	5/29/1975	<input checked="" type="checkbox"/>
	4016245	4/5/1977	Plank et al.	423	328	11/29/1974	<input checked="" type="checkbox"/>
	4046685	9/6/1977	Bray	210	23 H	3/17/1976	<input checked="" type="checkbox"/>
	4076842	2/28/1978	Plank et al.	423	328	11/8/1976	<input checked="" type="checkbox"/>
	4158621	1/19/1979	Swift et al.	208	114	7/21/1978	<input checked="" type="checkbox"/>
	4179358	12/18/1979	Swift et al.	208	114	11/8/1978	<input checked="" type="checkbox"/>
	4310440	1/12/1982	Wilson et al.	252	435	7/7/80	<input checked="" type="checkbox"/>
	4331694	5/25/1982	Izod	426	422	8/13/80	<input checked="" type="checkbox"/>
	4397827	8/9/1983	Chu	423	326	9/17/1981	<input checked="" type="checkbox"/>
	4401556	8/30/1983	Bezman et al.	208	111	4/12/82	<input checked="" type="checkbox"/>

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  <div style="border: 1px solid black; border-radius: 50%; width: 100px; height: 100px; display: flex; align-items: center; justify-content: center; margin: 10px auto;">             AUG 29 2003         </div> INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use several sheets if necessary)</i>	ATTY. DOCKET NO.  <b>W9484-01</b>	Page <u>2</u> of <u>5</u>  SERIAL NO  <b>09/468,450</b>
APPLICANT <b>Chester et al.</b>		
FILING DATE <b>12/21/1999</b>		GROUP <div style="text-align: center;"> <b>RECEIVED</b>              SEP 04 2003              TC 1700         </div>


U.S. PATENT DOCUMENTS							
EXAMINER INITIAL*	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	Copy Submitted
	4415438	11/15/1983	Dean et al.	208	120	11/24/81	<input checked="" type="checkbox"/>
	4439409	3/27/1984	Puppe	423	328	4/13/1982	<input checked="" type="checkbox"/>
	4440871	4/3/1984	Lok et al.	502	214	7/26/82	<input checked="" type="checkbox"/>
	4554143	11/19/1985	Messina et al.	423	306	7/15/83	<input checked="" type="checkbox"/>
	4567029	1/28/1986	Wilson et al.	423	306	7/15/83	<input checked="" type="checkbox"/>
	4588702	5/13/1986	Beck et al.	502	65	10/18/84	<input checked="" type="checkbox"/>
	4666875	5/19/1987	Pellet et al.	502	65	5/9/86	<input checked="" type="checkbox"/>
	4678765	7/7/1987	Chiang et al.	502	65	10/3/84	<input checked="" type="checkbox"/>
	4701315	10/20/1987	Wortel	423	328	4/18/85	<input checked="" type="checkbox"/>
	4742033	5/3/1988	Harris et al.	502	68	1/29/87	<input checked="" type="checkbox"/>
	4743572	5/10/1988	Angevine et al.	502	64	12/5/1986	<input checked="" type="checkbox"/>
	4767733	8/30/1988	Chester et al.	502	65	5/18/1987	<input checked="" type="checkbox"/>
	4791083	12/13/1988	Pellet et al.	502	64	6/15/87	<input checked="" type="checkbox"/>
	4832449	5/23/1989	Mundy et al.	350	174	11/25/1987	<input checked="" type="checkbox"/>
	4834869	5/30/1989	Angevine et al.	208	213	2/29/1988	<input checked="" type="checkbox"/>
	4859314	8/22/1989	Pellet et al.	208	114	6/2/87	<input checked="" type="checkbox"/>
	4880611	11/14/1989	von Ballmoos et al.	423	306	12/21/87	<input checked="" type="checkbox"/>
	4919787	4/24/1990	Chester et al.	208	52	4/7/1989	<input checked="" type="checkbox"/>
	4944864	7/31/1990	Kugler	208	120	3/27/89	<input checked="" type="checkbox"/>
	4954325	9/4/1990	Rubin et al.	423	328	10/6/1988	<input checked="" type="checkbox"/>
	5264203	11/23/1993	Beck et a.	423	703	11/23/1993	<input checked="" type="checkbox"/>

EXAMINER	DATE CONSIDERED
<small>*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</small>	

Form PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use several sheets if necessary)</i>		ATTY. DOCKET NO.  <b>W9484-01</b>		Page <u>3</u> of <u>5</u>  SERIAL NO  <b>09/468,450</b>			
		APPLICANT <b>Chester et al.</b>					
		FILING DATE <b>12/21/1999</b>		GROUP 			
U.S. PATENT DOCUMENTS							
EXAMINER INITIAL*	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	Copy Submitted
	5456821	10/10/1995	Absil et al.	208	114	8/17/94	<input checked="" type="checkbox"/>
	5482617	1/9/1996	Collins et al.	208	227	8/8/1994	<input checked="" type="checkbox"/>
	5965474	10/12/1999	Balko et al.	502	65	4/29/1997	<input checked="" type="checkbox"/>

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*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Form PTO-1449		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. <b>W9484-01</b>		Page <u>4</u> of <u>5</u> SERIAL NO: <b>09/468,450</b>		
		INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use several sheets if necessary)</i>		APPLICANT <b>Chester et al.</b>				
		FILING DATE <b>12/21/1999</b>		GROUP				
FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL*	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANS SUBMITTED?	Copy Submitted <input checked="" type="checkbox"/>	ENG LANG EQUIV
	01/46342	6/28/2001	WO	C10G29	02	No	<input checked="" type="checkbox"/>	09/458450

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EXAMINER	DATE CONSIDERED
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\*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Form PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use several sheets if necessary)</i>		ATTY. DOCKET NO.  <b>W9484-01</b>		Page <u>5</u> of <u>5</u>  SERIAL NO  <b>09/468,450</b>	
AUG 29 2003  <b>REC</b>  <b>SEP</b>  <b>TC 1700</b>		APPLICANT <b>Chester et al.</b>			
		FILING DATE <b>12/21/1999</b>		GROUP <b>TC 1700</b>	
EXAMINER INITIAL*	OTHER DOCUMENTS ( Including author , Title, Date, Pertinent Pages, Etc.)			TRANS SUBMITTED ?	Copy Submitted
	W. M. Meier, D.H. Olson and Ch. Baerlocher "Atlas of Zeolite Structure Types" 4th Revised Edition 1996; published on behalf of the Structure Commission of the International Zeolite Association by Elsevier.pgs 9-11.			No	<input checked="" type="checkbox"/>

EXAMINER	DATE CONSIDERED
*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To: MALCOLM D. KEEN  
EXXON MOBIL RESEARCH AND ENGINEERING  
CO.  
P.O. BOX 900  
ANNANDALE, NJ 08801-0900

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EMRE LAW  
NOTIFICATION OF TRANSMITTAL OF  
INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing  
(day/month/year)

11 JAN 2002

Applicant's or agent's file reference

P1999J090

IMPORTANT NOTIFICATION

International application No.

PCT/US00/33999

International filing date (day/month/year)

15 DECEMBER 2000

Priority Date (day/month/year)

21 DECEMBER 1999

Applicant

MOBIL OIL CORPORATION

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/MB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

JAN 28 2002

Name and mailing address of the IPEA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

NADINE PREISCH

Telephone No. (703) 308-0661

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <u>P1999J090</u>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <u>PCT/US00/33999</u>	International filing date (day/month/year) <u>15 DECEMBER 2000</u>	Priority date (day/month/year) <u>21 DECEMBER 1999</u>
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant <u>MOBIL OIL CORPORATION</u>		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>2</u> sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step or industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>

Date of submission of the demand  <u>22 JUNE 2001</u>	Date of completion of this report  <u>02 JANUARY 2002</u>
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer  NADINE PREISCH
Facsimile No. (703) 305-3230	Telephone No. (703) 308-0661

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/33999

**I. Basis of the report**1. With regard to the **elements** of the international application:\*☐ the international application as originally filed☒ the description:

pages (See Attached)

, as originally filed

pages , filed with the demand

pages , filed with the letter of

☒ the claims:

pages (See Attached)

, as originally filed

pages , as amended (together with any statement) under Article 19

pages , filed with the demand

pages , filed with the letter of

☒ the drawings:

pages (See Attached)

, as originally filed

pages , filed with the demand

pages , filed with the letter of

☒ the sequence listing part of the description:

pages (See Attached)

, as originally filed

pages , filed with the demand

pages , filed with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:☐ contained in the international application in printed form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. ☒ The amendments have resulted in the cancellation of:☒ the description, pages NONE☒ the claims, Nos. NONE☒ the drawings, sheets/figs NONE5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\*Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/33999

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. statement

Novelty (N)	Claims	1-9	YES
	Claims	NONE	NO
Inventive Step (IS)	Claims	NONE	YES
	Claims	1-9	NO
Industrial Applicability (IA)	Claims	1-9	YES
	Claims	NONE	NO

## 2. citations and explanations (Rule 70.7)

Claims 1-9 lack an inventive step under PCT Article 33(5) as being obvious over Absil et al.(5,456,821) in view of Pine (3,904,550) and Kearby (3,271,299).

Applicants are claiming a process for the catalytic cracking of a hydrocarbon in the presence of a large pore aluminophosphate catalyst.

The reference of Absil et al.(5,456,821) discloses a catalytic cracking process involving the use of a large pore aluminophosphate composition with pore openings greater than 7 angstroms. See column 5, lines 15-30, column 6, lines 52-63 and column 7, lines 11-18. The catalyst may comprise a zeolite-Y. See column 7, lines 8-10. The catalytic conversion is suitable for the production of gasoline from a heavy feed such as gas oil. See abstract, lines 7-8 and column 5, lines 60-65.

Several differences are noted between the reference of Absil et al.(5,456,821) and applicants' claimed invention. Absil et al.(5,456,821) does not disclose applicants' aluminophosphate modifying components. In addition, the reference is silent about the specific surface area and pore volume of the catalyst. In addition, the reference does not disclose applicants' claimed ratio of zeolite-Y and aluminophosphate.

The reference of Pine(3,904,550) discloses that zirconium, cobalt, zinc and vanadium are known to promote aluminum phosphates in cracking reactions. See column 3, lines 1-59.

The reference of Kearby (3,271,299) discloses aluminophosphate materials with surface areas of 200-600 m<sup>2</sup>/g and pore diameters of 72 angstroms. See column 1, lines 30-35 and 60-65. The disclosed materials are suitable for catalytic cracking. See column 1, lines 45-48. Note: 72 angstroms appears to be an "average" pore diameter. Most likely, the majority of pores (i.e. at least 50%) of pores are about 72 angstroms.

It would not have involved an inventive step to modify the catalyst of Absil et al.(5,456,821) to include zirconium, cobalt, zinc and vanadium because the reference of Pine (3,904,550) illustrates that such components are known promoters for aluminum phosphates used in catalytic cracking processes.

In addition, it would not have involved an inventive step to select an aluminophosphate with a surface area or pore volume (Continued on Supplemental Sheet.)

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/33999

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**CLASSIFICATION:**

The International Patent Classification (IPC) and/or the National classification are as listed below:

IPC(7): C10G 29/02, 29/04, 11/02 and US Cl.: 208/114, 120.01, 120.05, 120.1, 120.25, 120.35, 292, 248, 249, 244

**I. BASIS OF REPORT:**

This report has been drawn on the basis of the description,  
page(s) 1-33, as originally filed.  
page(s) NONE, filed with the demand.  
and additional amendments:  
NONE

This report has been drawn on the basis of the claims,  
page(s) NONE, as originally filed.  
page(s) NONE, as amended under Article 19.  
page(s) NONE, filed with the demand.  
and additional amendments:  
Claim pages 34 and 35, filed with the letter of 03 December 2001.

This report has been drawn on the basis of the drawings,  
page(s) 1, as originally filed.  
page(s) NONE, filed with the demand.  
and additional amendments:  
NONE

This report has been drawn on the basis of the sequence listing part of the description:  
page(s) NONE, as originally filed.  
pages(s) NONE, filed with the demand.  
and additional amendments:  
NONE

**V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):**

overlapping the parameters selected by applicants because the reference of Kearby (3,271,299) illustrates that such parameters are known to accomplish an effective catalytic cracking process. Also, applicants' aluminophosphate/zeolite-Y ratio does not involve an inventive step over the teachings of Absil et al.(5,456,821) because Absil et al.(5,456,821) equates aluminophosphates and zeolite-Y. As a result, any ratio of components is considered to accomplish similar conversion.

Claims 1-9 lack an inventive step under PCT Article 33(3) as being obvious over Kowalski et al.(5,888,378) in view of Pine (3,904,550) and Kearby (3,271,299).

Applicants are claiming a process for the catalytic cracking of a hydrocarbon in the presence of a large pore aluminophosphate catalyst.

The reference of Kowalski (5,888,378) discloses a process for catalytic cracking of a hydrocarbon employing a large pore phosphorous containing zeolite(ALPO) and/or zeolite-Y. See abstract, lines 1-8 and column 3, lines 10-45. The large pore zeolite has a pore size of greater than about 7 angstroms. See abstract. The process is suitable for producing gasoline from heavier hydrocarbons. See column 1, lines 10-14.

Several differences are noted between the reference of Kowalski et al.(5,888,378) and applicants' claimed invention. Kowalski et al.(5,888,378) does not disclose applicants' aluminophosphate modifying components. In addition, the reference is silent about the specific surface area and pore volume of the catalyst. In addition, the reference does not disclose applicants' claimed ratio of zeolite-Y and aluminophosphate.

The reference of Pine(3,904,550) discloses that zirconium, cobalt, zinc and vanadium are known to promote aluminum phosphates in cracking reactions. See column 3, lines 1-59.

The reference of Kearby (3,271,299) discloses aluminophosphate materials with surface areas of 200-600 m<sup>2</sup>/g and pore diameters of 72 angstroms. See column 1, lines 30-35 and 60-65. The disclosed materials are suitable for catalytic cracking. See column 1, lines 45-48. Note: 72 angstroms appears to be an "average" pore diameter. Most likely, the majority of pores (i.e. at least 50%) of pores are about 72 angstroms.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/33999

## Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 11

It would not have involved an inventive step to modify the catalyst of Kowalski et al. (5,888,378) to include zirconium, cobalt, zinc and vanadium because the reference of Pine (3,904,550) illustrates that such components are known promoters for aluminum phosphates used in catalytic cracking processes.

In addition, it would not have involved an inventive step to select an aluminophosphate with a surface area or pore volume overlapping the parameters selected by applicants because the reference of Kearby (3,271,299) illustrates that such parameters are known to accomplish an effective catalytic cracking process.

Also, applicants' aluminophosphate/zeolite-Y ratio does not involve an inventive step over the teachings of Kowalski (5,888,378) because Kowalski et al. (5,888,378) equates aluminophosphates and zeolite-Y. As a result, any ratio of components is considered to accomplish similar conversion.

Claims 1-9 meet the criteria as set out in PCT Article 33(4) because applicants process has industrial applicability in converting petroleum stocks.

Applicants' arguments asserting that the claimed process distinguishes over the primary references of Absil and Kowalski because applicants' invention involves the use of an amorphous aluminophosphate whereas the applied art involves the use of a crystalline aluminophosphate are not persuasive. It is maintained that applicants' claims do not distinguish over the applied art because the claims do not limit the aluminophosphate to an amorphous form. Applicants' surface area and pore size limitations are remedied by the secondary reference. See the modified rejection above addressing applicants' pore size distribution limitations. Furthermore, the secondary reference of Pine is considered to properly remedy the deficiencies of the primary references with respect to suggesting known modifiers. It is not required that the secondary reference disclose the pore size of the aluminophosphate to suggest known modifiers.

----- NEW CITATIONS -----

NONE

PCT/US 00/33999  
IPEA/US 03 DEC 2001

**WHAT IS CLAIMED IS:**

1. A process for catalytic cracking of a hydrocarbon feedstock comprising contacting the feedstock with a catalyst composition comprising a mesoporous aluminophosphate material which comprises a solid aluminophosphate composition modified with at least one element selected from zirconium, cerium, lanthanum, manganese, cobalt, zinc, and vanadium, wherein the mesoporous aluminophosphate material has a specific surface area of at least  $100 \text{ m}^2/\text{g}$ , an average pore diameter less than or equal to  $100 \text{ \AA}$ , and a pore size distribution such that at least 50% of the pores have a pore diameter less than  $100 \text{ \AA}$  and further, that 10%-56% of the pores have a pore diameter of 50 to  $100 \text{ \AA}$ .
2. The process of claim 1 wherein the mesoporous aluminophosphate material has an average pore diameter of 30 to  $100 \text{ \AA}$ .
3. The process of claim 1 wherein the mesoporous aluminophosphate material has a specific surface area of at least  $175 \text{ m}^2/\text{g}$ .
4. The process of claim 1 wherein the mesoporous aluminophosphate material has a pore volume in the range from 0.10 cc/g to 0.75 cc/g.
5. The process of claim 1 wherein the catalyst composition further comprises a primary catalytically active cracking component.
6. The process of claim 5 wherein the weight ratio of the aluminophosphate material to the primary cracking catalyst component is about 0.01 to 0.5.
7. The process of claim 5 wherein the primary catalytically active cracking component comprises a large pore molecular sieve having a pore size greater than about 7 Angstrom.



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8. The process of claim 7 wherein the primary catalytically active cracking component comprises a zeolite Y.

9. The process of claim 1 wherein the hydrocarbon feedstock contains sulfur and the process produces a gasoline boiling range product having a lower sulfur content than the feedstock.

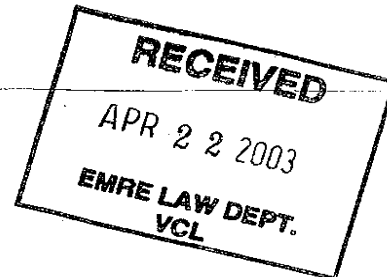
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Date:

14 April 2003

W9484-01

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## **European Search Report**

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1. Here is a copy of an EPO Communication dated 11 April 2003 and recently received in Machelen. Please bring it to the attention of the correct Clinton/Fairfax/Baton Rouge attorney.
2. Data "Search Report Date" has already been entered into PCMaster.
3. By return, please acknowledge receipt and let the Machelen Handling Attorney (William Muller) know which US attorney is responsible for this case.
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Total pages : 5



P.B.5818 - Patentlaan 2  
2280 HV Rijswijk (ZH)  
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FAX +31 70 340 3016

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Zeichen/Ref./Réf.

P1999J090

Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°.

00984409.3-2104-US0033999

Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire

EXXONMOBIL OIL CORPORATION

## COMMUNICATION

The European Patent Office herewith transmits as an enclosure the European search report for the above-mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

☐ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

## REFUND OF THE SEARCH FEE

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.



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11 APR. 2003

DANA HEPS



European Patent  
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**SUPPLEMENTARY  
EUROPEAN SEARCH REPORT**

Application Number  
**EP 00 98 4409**

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 5 264 203 A (BECK JEFFREY S ET AL) 23 November 1993 (1993-11-23) Example 26(i) * column 13, line 47 - line 54 * * column 6, line 34 - column 6, line 43 * ----	1-9	C10G11/18
X	US 3 271 299 A (KEARBY KENNETH K) 6 September 1966 (1966-09-06) * column 10, line 19 - line 51 * * column 14, line 13 - line 26 * -----	1-6,9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			C10G
The supplementary search report has been based on the last set of claims valid and available at the start of the search.			
Place of search <b>MUNICH</b>		Date of completion of the search <b>2 April 2003</b>	Examiner <b>Schwaller, J-M</b>
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 98 4409

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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02-04-2003

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5264203	A	23-11-1993	US	5102643 A	07-04-1992
			US	5098684 A	24-03-1992
			AU	644136 B2	02-12-1993
			AU	7214891 A	21-08-1991
			CA	2072352 A1	26-07-1991
			DE	69106121 D1	02-02-1995
			DE	69106121 T2	04-05-1995
			DK	512026 T3	20-03-1995
			EP	0512026 A1	11-11-1992
			ES	2072602 T3	16-07-1995
			JP	5503499 T	10-06-1993
			KR	172612 B1	18-02-1999
			US	5378440 A	03-01-1995
			WO	9111390 A2	08-08-1991
			US	5370785 A	06-12-1994
			US	5108725 A	28-04-1992
			US	5156829 A	20-10-1992
			US	5110572 A	05-05-1992
			US	5104515 A	14-04-1992
			US	5112589 A	12-05-1992
			US	5198203 A	30-03-1993
			US	5183561 A	02-02-1993
			US	5837639 A	17-11-1998
			US	5238676 A	24-08-1993
			US	5258114 A	02-11-1993
			US	5246689 A	21-09-1993
			US	5174888 A	29-12-1992
			US	5211934 A	18-05-1993
			US	5215737 A	01-06-1993
			US	5196633 A	23-03-1993
			US	5200058 A	06-04-1993
			US	5304363 A	19-04-1994
			US	5220101 A	15-06-1993
			US	5300277 A	05-04-1994
			US	5250282 A	05-10-1993
			US	5334368 A	02-08-1994
			CS	9101669 A3	17-06-1992
			MX	168309 B	17-05-1993
			SK	280860 B6	14-08-2000
			US	5145816 A	08-09-1992
			ZA	9104162 A	24-02-1993
US 3271299	A	06-09-1966	DE	1191345 B	22-04-1965
			DE	1300522 B	07-08-1969
			FR	1269892 A	18-08-1961
			GB	917762 A	06-02-1963

EP 00 98 4409

02-04-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3271299	A	NL	255524 A